



Spring 2006 Prizes & Awards

APS Announces Spring 2006 Prize and Award Recipients

Forty-one APS prizes and awards will be presented during special sessions at three spring meetings of the Society: the 2006 March Meeting, March 13-17, in Baltimore, MD; the 2006 April Meeting, April 22-25, in Dallas, TX; and the 2006 Atomic, Molecular and Optical Physics Meeting, May 16-20, 2006 in Knoxville, TN.

Citations and biographical information for each recipient follow. The Apker Award recipients appeared in the December 2005 issue of APS News (<http://www.aps.org/praw/06winners.cfm>).

Additional biographical information and appropriate web links can be found at the APS web site (<http://www.aps.org/praw/index.cfm>). Nominations for most of next year's prizes and awards are now being accepted. For details, see pages 7 and 8 of this of this insert.

2006 PRIZES AND AWARDS

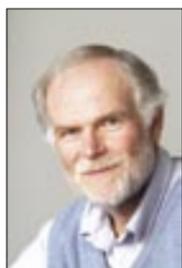
WILL ALLIS PRIZE

Michael Lieberman

University of California – Berkeley

Citation: "For his ground-breaking and insightful experimental and theoretical work on the physics of electrical discharges and their applications to plasma processing."

Lieberman received his Ph.D. from Massachusetts Institute of Technology in 1966. He joined the Department of Electrical Engineering and Computer Sciences (EECS) at Berkeley in 1966. His research interests are plasma processing of materials and plasma modeling and diagnostics. He has also collaborated on research in nonlinear dynamics. His latest book, co-authored with A.J. Lichtenberg, *Principles of Plasma Discharges and Materials Processing*, was published in 1994, with an expanded second edition appearing in 2005.



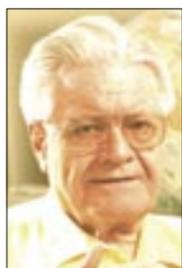
HANS BETHE PRIZE

Alastair G.W. Cameron

Harvard University

Citation: "For his pioneering work in developing the fundamental concepts of nuclear astrophysics. These basic ideas, laid out almost 50 years ago, are still the basis of current research in this field."

Cameron earned his PhD in nuclear physics from University of Saskatchewan and taught at Iowa State College until 1959, when he moved to CalTech. In 1966 he moved to Yeshiva University in New York, and seven years later settled in at Harvard University. His research included astrophysics, planetary sciences and meteoritics. He was among the first to



develop the theory of nucleosynthesis, and made important contributions to the study of supernova explosions, neutron stars, planet formation, stellar evolution, and the physics of planetary atmospheres. Shortly after being named winner of the Bethe Prize, Cameron died of heart failure in Tucson, Arizona. He was 80 years old.

BIOLOGICAL PHYSICS PRIZE

Alfred G. Redfield

Brandeis University

Citation: "For his seminal contributions to the theory and technical development of nuclear magnetic resonance spectroscopy, and for pioneering applications of this technique to the study of biological molecules."

Redfield received a PhD from the University of Illinois in 1953. His postdoc at Harvard resulted in his first NMR papers on spin thermodynamics in the rotating frame, and on perturbation theory of relaxation. He joined the late IBM Watson Laboratory at Columbia University in 1955 where he studied primarily normal and superconducting metals using field-cycling NMR. In 1969 he shifted to work on biological NMR. He moved to Brandeis in 1972, where his early work included demonstration and utilization of pulsed FT NMR using soft and composite pulses in, especially, transfer RNA. During his recent retirement he has demonstrated the feasibility of building a device to perform high-resolution field-cycling NMR in a shared commercial (500 MHz) instrument.



TOM W. BONNER PRIZE

John C. Hardy

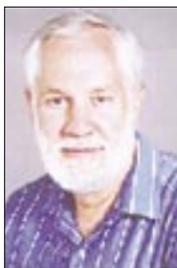
Texas A&M University

Ian S. Towner

Queen's University

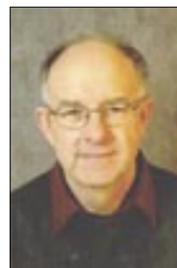
Citation: "In recognition of ultra-high precision measurements and extraordinarily detailed analyses of $0^+ \rightarrow 0^+$ nuclear beta decay rates to explore the unitarity of the Cabibbo-Kobayashi-Maskawa quark mixing matrix as a test of the electroweak Standard Model."

Hardy received his PhD in nuclear physics from McGill University in 1965. He spent the next two years at the Oxford University (England) Nuclear Physics Laboratory, and then went to the Lawrence Radiation Laboratory at the University of California, Berkeley. He returned in 1970 to Canada, joining the staff at the Chalk River Nuclear Laboratories of AECL. He left AECL in 1997 to join the Cyclotron Institute of Texas A&M University. His current research interests are in nuclear tests of the weak interaction via superallowed beta-decay and of internal conversion.



A native of England, Towner received his Ph.D from Battersea College in 1966.

He spent 1965-1970 as a research officer in the Nuclear Physics Laboratory of the University of Oxford. In 1970, Towner joined the theoretical physics branch of the Chalk River Laboratories of AECL, where he worked for 27 years. He left AECL in 1997 to become an adjunct professor of physics at Queen's University, Kingston, Canada. His current research interests are in radiative and isospin-symmetry breaking corrections in superallowed Fermi beta decay. His past interests include shell-model calculations of nuclear structure, meson-exchange currents, magnetic moments, axial-vector couplings in beta decay and transfer reactions.



OLIVER E. BUCKLEY PRIZE

Noel A. Clark

University of Colorado

Robert Meyer

Brandeis University

Citation: "For groundbreaking experimental and theoretical contributions to the fundamental science and applications of liquid crystals, particularly their ferroelectric and chiral properties."

Clark received his Ph.D. from MIT in 1970. He then spent seven years at Harvard, and in 1977 he joined the faculty of the University of Colorado, Boulder, where he is now professor of physics and director of the Liquid Crystal Materials Research Center. In 1984 he co-founded Displaytech, Inc., currently the world's largest producer of ferroelectric liquid crystal devices and materials. Clark has worked in many areas in soft condensed matter and complex fluid physics, including liquid crystals, colloidal liquids and crystals, liquid structure and melting, and biophysics. His current interests are in liquid crystals of nucleic acids.



Meyer received his Ph.D. in applied physics from Harvard in 1970. He continued as a postdoc and Assistant Professor in Applied Physics at Harvard, and was promoted to associate professor in 1974. After a year at Chalmers University in Goteborg, and at the Ecole Supérieure de Physique et de Chimie Industrielles in Paris, he joined the faculty at Brandeis University in 1978. Meyer's research has addressed a wide range of topics involving the physics of liquid crystals and the exploration of novel soft materials based on them.



DAVISSON-GERMER PRIZE

C. Lewis Cocke

Kansas State University

Citation: "For a sustained record of novel experimental developments and new insights into interactions of ion and photon beams with atoms and molecules."

Cocke received his Ph.D. in nuclear physics from Caltech in 1967. After two years as a research associate at the Centre de Recherches Nucléaires in Strasbourg, France he moved to atomic physics and joined the physics faculty at Kansas State University. His atomic physics work has been in the areas of energetic ion-atom collisions, especially involving highly-charged ions, recoil ion production, momentum imaging, and the interaction of synchrotron radiation and short intense laser pulses with atoms and light molecules.



DANNIE HEINEMAN PRIZE

Sergio Ferrara

CERN

Daniel Freedman

Massachusetts Institute of Technology

Peter van Nieuwenhuizen

SUNY, Stony Brook

Citation: "For constructing supergravity, the first supersymmetric extension of Einstein's theory of general relativity, and for their central role in its subsequent development."

Ferrara graduated from the University of Rome in 1968. Since then he has worked as a researcher at the Frascati National Laboratories; as a CNRS Visiting Scientist at the Laboratoire de Physique Théorique, Ecole Normale Supérieure, Paris, and at the Theoretical Studies Division at CERN, Geneva. He became a staff member of CERN in 1981 and a professor of physics at the University of California, Los Angeles, in 1985. Since 1986 he has been a senior staff member at CERN. Ferrara has written papers in the field of theoretical elementary particle physics and mathematical physics.



Freedman was born in Hartford, Connecticut in 1939. He received his PhD from the University of Wisconsin in 1964. After postdoctoral fellowships at Imperial College, London, University of California, Berkeley, and the Institute for Advanced Study Princeton, Freedman joined the faculty of the (C. N. Yang) Institute for Theoretical Physics at



Table of Contents

1 **Prize and Award Recipients**

4 **New APS Fellows**

8 **Nominations for 2007 Prizes and Awards**

State University of New York, Stony Brook in 1968. In 1980 he became a faculty member at the Massachusetts Institute of Technology. Freedman is an elementary particle theorist who concentrates on supersymmetric field theories, including supergravity. In addition to the first construction of supergravity in 1976, he contributed such developments as gauged supergravity and has extensively studied applications of supergravity to the AdS/CFT correspondence.

Van Nieuwenhuizen was born in Utrecht, the Netherlands, and studied physics and mathematics at the University of Utrecht. After his studies in Utrecht he went to CERN (Geneva), the Ecole Normale Supérieure, and Brandeis University, each for two years periods. In 1975 he joined the faculty of the (now C.N.Yang-) Institute for Theoretical Physics of the State University of New York at Stony Brook, NY. He became a distinguished professor, and succeeded C. N. Yang in 1999 as Director. Van Nieuwenhuizen has written over 300 articles on subjects in quantum field theory, quantum gravity, supergravity, conformal field theories, anomalies, Kaluza-Klein reductions, path integrals, W gravities, nonlinear sigma models, solitons, instantons, and string theory.



FRANK ISAKSON PRIZE

Roberto Merlin
University of Michigan

Citation: "For original contributions to spontaneous Raman and ultrafast spectroscopy of fundamental excitations in solids."

Merlin received the Licenciado en Ciencias Físicas (M.S.) degree from the University of Buenos Aires, Argentina, in 1973 and the Dr. rer. nat. (Ph. D.) degree from the University of Stuttgart, Germany, in 1978. He was a postdoctoral research associate at the University of Illinois at Urbana-Champaign. In 1980, he joined the faculty of the University of Michigan. Since 2000, he has held a joint appointment in the Department of Electrical Engineering and Computer Science. His current research interests focus on the generation and control of coherent vibrational and electronic fields using ultrafast laser pulses.



JULIUS E. LILIENFELD PRIZE

Mikhail Shifman
University of Minnesota

Citation: "For contributions to theoretical high energy physics, in particular for the understanding of strong interactions and dynamics of supersymmetric gauge theories, and for communicating the excitement of science to the public."

A native of Riga, Latvia (formerly a part of the USSR), Shifman was educated in Moscow. In 1966 he was admitted to the Moscow Institute of Physics (Dolgoprudny, Moscow region). His undergraduate studies were in physics with specialization in high energy physics. In 1972 he was admitted for Ph.D. research by the Institute of Theoretical and Experimental Physics (ITEP, Moscow). He was among the first to apply QCD to the theory of hadrons and various hadronic processes. Beginning in 1974 he concentrated on understanding weak flavor-changing



decays and discovered a novel mechanism, now known as the "penquin mechanism". In 1990 he accepted a professorship at the University of Minnesota.

JAMES C. MCGRODDY PRIZE

Hongjie Dai
Stanford University

Alex Zettl
University of California, Berkeley
[Photo and Biographical information unavailable at press time.]

Citation: "For developing novel synthesis pathways for preparing carbon and boron nitride nanotubes and for pioneering applications of these for sensing, electronics and nanomechanics."

Born in the Shaoyang, Hunan, province of China, Dai received his Ph.D. from Harvard University in 1994. After postdoctoral work with Richard E. Smalley at Rice University, in 1997, he joined the faculty of Stanford University. Dai's research group has developed chemical vapor deposition synthesis methods for carbon nanotubes, including deterministic synthesis of nanotube arrays useful for integration into various devices for quantum transport and other mesoscopic physics studies. The group's latest research includes interfacing carbon nanotubes with biological systems for novel nanobiotechnology applications, and using nanotubes as novel near infrared antennas for nucleic acid delivery and cancer cell destruction.



LARS ONSAGER PRIZE

Rodney Baxter
Australian National University

Citation: "For his original and groundbreaking contributions to the field of exactly solved models in statistical mechanics, which continue to inspire profound developments in statistical physics and related fields."

Baxter received his PhD from the Australian National University in 1964, and earned his ScD from Cambridge University in 1984. After stints with the Iraq Petroleum Company in London, and as an assistant professor at MIT, he returned to Australian National University as a faculty member. In 1971 he used the "star-triangle" relation to calculate the free energy of the eight-vertex model, and went on to similarly solve the hard-hexagon and chiral Potts models. He developed the "corner transfer matrix" method for calculating the order parameters of the eight-vertex and similar models. In 2005 he applied the method of Jimbo, Miwa and Nakayashiki to verify Albertini, McCoy, Perk, and Tang's conjecture for the order parameter of the chiral Potts model. In 1987 he was awarded the APS Dannie Heineman Prize.



ABRAHAM PAIS PRIZE FOR HISTORY OF PHYSICS

John Lewis Heilbron
Oxford University

Citation: "For his groundbreaking and broad historical studies, ranging from the use of Renaissance churches for astronomy, through 17th and 18th century electrical science, to modern physics."

Heilbron is professor emeritus of history and history of science at the University of California, Berkeley. He received his PhD in history in 1964, also from Berkeley, where he spent most of his academic

career. His specialty is the technical aspects of science, as well as its social, political, and institutional contexts over the ages. His books on the history of physics include biographies of Henry Moseley and Ernest Rutherford, as well as studies of Max Planck's morality, Ernest O. Lawrence's laboratory, and the use of churches in early modern Europe as solar observatories. For the past 25 years he has edited Historical Studies in the Physical Sciences.



GEORGE E. PAKE PRIZE

Charles B. Duke
Xerox Innovation Group

Citation: "For groundbreaking theoretical contributions to the understanding of tunneling in solids, and inelastic scattering of low-energy electrons in solids, and for his outstanding contributions to Xerox Corporate Research both as an intellectual leader and research manager."

Duke is vice president and senior research fellow in the Xerox Innovation Group. Prior to holding this position, he was deputy director and chief scientist of the Pacific Northwest Division of the Battelle Memorial Institute and affiliate professor of physics at the University of Washington. From 1972 to 1988 he held various technical and management positions at the Xerox Research Laboratories in Webster, NY and was an adjunct professor of physics at the University of Rochester. During 1969-1972, he was a professor of physics at the University of Illinois in Urbana, IL, following six years at General Electric in Schenectady, NY. He received his Ph.D. in physics from Princeton University in 1963. He served as president of the American Vacuum Society in 1979. He currently is the chair of a National Research Council study of Network Science.



W.K.H. PANOFSKY PRIZE

William Ford
University of Colorado

John Jaros
SLAC

Nigel Lockyer
University of Pennsylvania
[Photo unavailable at press time.]

Citation: "For leading contributions to the discovery of the long b-quark lifetime with the MAC and Mark II experiments at SLAC. The unexpectedly large value of the b-quark lifetime revealed the hierarchy of the Cabibbo-Kobayashi-Maskawa quark mixing matrix."

Ford earned his Ph.D. in physics at Princeton University in 1967. After postdoctoral positions at Princeton and Caltech, he joined the faculty of the University of Pennsylvania. At Fermilab he participated in the early observations in neutrino interactions of weak neutral currents and the dimuon signature for charm production. Since 1976 he has been a member of the physics faculty at the University of Colorado. Most of his research has been in electron-positron annihilation experiments. His current emphasis is in B meson decays, where his group has discovered a number of charmless modes and measured their CP violation parameters.

Jaros did his graduate work in experimental particle physics at the



University of California at Berkeley, receiving his PhD in 1975. He then joined the Mark I Collaboration at SLAC. He has remained at SLAC ever since. Jaros' physics interests have centered on "vertex physics": measuring heavy quark and lepton lifetimes and mixing, and tagging quark flavor and charge. At PEP, he led the Mark II Secondary Vertex Detector project and measured the tau, charm, and b lifetimes. Jaros' current interests center on the physics and detectors for the International Linear Collider.



A native of Scotland, Lockyer earned his PhD in 1980 from Ohio State University. He spent four years as a postdoctoral fellow at SLAC before joining the faculty of the University of Pennsylvania. His research has focused on high energy particle experiments at the energy frontier, with a keen interest in testing symmetries and the study of the heaviest quarks. He also collaborated for several years on proton therapy applications and medical physics detectors. His current research includes contributing to accelerator advances and the challenges associated with the next generation of high energy accelerators.

EARLE K. PLYLER PRIZE

Mark Johnson
Yale University

Citation: "For the applications of spectroscopic methods towards the understanding of solvation on the microscopic scale, especially the solvation of protons and hydroxide anions by water."

Johnson earned his PhD in 1983 from Stanford University. He is presently a professor of chemistry at Yale University. His research interests include spectroscopic and pump-probe kinetic studies of molecular clusters as model systems with which to expose fundamental, molecular level paradigms underlying condensed phase behavior. He has served on the executive committee of the APS Division of Laser Science, and in the physical chemistry division of the American Chemical Society.



POLYMER PHYSICS PRIZE

Ludwik Leibler
Ecole Supérieure de Physique et Chimie Industrielles, Paris

Citation: "For outstanding theoretical contributions to the fundamental understanding of self-assembly of diblock copolymers and gels, and wetting."

Leibler received his PhD in 1976 in Theoretical Physics from Warsaw University, and then spent two years as a post-doctoral fellow at the College de France in Paris and Saclay, France. He is a researcher in Centre National de Recherche Scientifique (CNRS). In 2001 he became an adjunct professor of soft matter and chemistry at Ecole Supérieure de Physique et Chimie Industrielles in Paris where his research interests include influence of molecular disorder on mesoscopic structure and properties of polymer materials, impact resistance, fracture and adhesion, design of stimuli responsive materials and supramolecular chemistry.



ANEESUR RAHMAN PRIZE

David Vanderbilt
Rutgers University

Citation: "For his conceptual breakthroughs in his development of the ultrasoft pseudopotential and the modern theory of polarization, and their impact on first-principles investigations of the properties of materials."

Vanderbilt received his PhD in physics from the Massachusetts Institute of Technology in 1981. He spent three years as a postdoctoral fellow at the University of California at Berkeley before joining the physics faculty of Harvard University in 1984. He has been a professor in the Department of Physics and Astronomy at Rutgers University since 1991. Vanderbilt is an expert in the development of methods for electronic structure calculations and the application of such methods for computational materials theory. His current research interests include the development of methods for treating insulators in finite electric fields, advancing the theory and applicability of Wannier functions, and applying Berry-phase methods to study magnetic systems.



ANDREI SAKHAROV PRIZE

Yuri F. Orlov
Cornell University

Citation: "For his distinction as a creative physicist and as a life-long, ardent leader in the defense and development of international human rights, justice and the freedom of expression for scientists."

Born in Moscow, Orlov studied physics at the Physico-Technical Institute. In 1952, he joined the Institute for Theoretical and Experimental Physics. Fired for a pro-democracy speech in 1956, he worked on accelerator physics in Yerevan and Novosibirsk. He joined the Institute of Terrestrial Magnetism in 1972 but was fired one year later for writing to Brezhnev in support of Andrei Sakharov and glasnost. He helped found the Soviet chapter of Amnesty International in 1973, founded the first Helsinki human rights monitoring group in 1976, and was arrested for "anti-Soviet agitation and propaganda" in 1977. After seven years in prison and strict-regime labor camp and more than two years in Siberian exile, he was deported to New York City. Since 1987 he has been a senior scientist at Cornell University's Laboratory for Elementary-Particle Physics, and a consultant at Brookhaven National Laboratory. Orlov has continued his human rights activity, campaigning for Russian and Chinese political prisoners, advising Russian human rights organizations, and lobbying for a Bosnian war crimes tribunal.



J.J. SAKURAI PRIZE

Savas Dimopoulos
Stanford University

Citation: "For his creative ideas on dynamical symmetry breaking, supersymmetry, and extra spatial dimensions, which have shaped theoretical research on TeV-scale physics, thereby inspiring a wide range of experiments."

Dimopoulos received his Ph.D. at the University of Chicago in 1978. He joined the faculty at Stanford in 1979 and has been spending most of his time searching for the theory of physics beyond the standard model. In 1981 he proposed the supersymmetric standard model with

Howard Georgi. Its main prediction, the existence of supersymmetric particles, will be tested at the Large Hadron Collider. He also proposed the possible existence of large new dimensions with Nima Arkani-Hamed and Gia Dvali in 1998. Most recently he put forward the theory of split supersymmetry with Nima Arkani-Hamed.



ARTHUR L. SCHAWLOW PRIZE

Paul B. Corkum
National Research Council of Canada
[Photo and Biographical information unavailable at press time.]

Citation: "For seminal contributions to the development of ultrashort, intense laser-field science, including his development of the recollision model for laser-matter interactions, and his leadership in the emerging field of attosecond laser science."

UNDERGRADUATE RESEARCH INSTITUTE PRIZE

Rainer Grobe
Illinois State University
Q. Charles Su
Illinois State University

Citation: "For outstanding effort at creating a successful and renowned optical theory research program at Illinois State University, and for their exemplary involvement of undergraduates in this research."

Grobe is Distinguished Professor of Physics at Illinois State University. After completing his Ph.D. at the University of Essen in 1989, he worked six years at the University of Rochester before coming to Illinois State in 1995. He holds a patent in optical pulse propagation and has published about 120 peer-reviewed papers – 31 with undergraduate coauthors. Together with Su, he has supervised the research work of about 35 undergraduate students, some of whom have won national awards. His main research interest is to use computer simulations to investigate a wide variety of areas including nonlinear chaotic dynamics, optical pulse propagation, relativistic atomic interactions, bio-optical imaging in turbid media, and computational quantum field theory.



Su received his PhD in 1991 from the University of Rochester. He was a research associate at the Max-Planck Institute for Quantum Optics (Germany) before joining Illinois State University in 1994. He became a professor in 2002. Over a third of the more than 90 peer-reviewed papers he has published co-authored were with undergraduates coauthors. Su studies various aspects of laser-matter interactions ranging from laser fusion diagnosis to non-invasive imaging for biological systems.



ROBERT R. WILSON PRIZE

Glen Lambertson
Lawrence Berkeley National Laboratory

Citation: "For fundamental contributions to accelerator science and technology particularly in the area of beam electrodynamics including the development of beam instrumentation for the feedback systems that are essential for

the operation of high luminosity electron and hadron colliders."

Lambertson received an M.S. in engineering physics from the University of Colorado in 1948, and an M.A. in physics from the University of California, Berkeley in 1951. He was a senior scientist at Lawrence Berkeley National Laboratory from 1951 to 1991, and served as a consultant to Stanford Linear Accelerator Laboratory from 1995 to 1998. He holds several patents, including ones for magnetic extractors for high energy particles; a focusing magnet with narrow septum; and printed-circuit steering coils. He also worked on system design and fabrication of equipment for the stochastic cooling of antiprotons for proton-antiproton collisions in the TEV I ring at Fermilab. He served as leader for the analysis and the hardware design for the feedback control of space-charge instabilities in the Advanced Light Source; and provided beam electrodes and lead the system design for control of beam instabilities in the PEP II electron-proton collider.



AWARDS

DAVID ADLER LECTURESHIP AWARD

James Chelikowsky
University of Texas

Citation: "For his creative and outstanding research in computational materials physics and for his effectiveness in communicating research results through lectures and publications."

Chelikowsky holds the W.A. "Tex" Moncrief Jr. Chair in Computational Materials within the Institute for Computational Engineering and Sciences at the University of Texas at Austin. He received his PhD in condensed matter physics from the University of California at Berkeley in 1975. He worked at Bell Labs as a postdoctoral fellow, at the University of Oregon as an assistant professor and at Exxon Corporate Research Science Labs as a group leader in theoretical physics and chemistry. In 1987, he joined the faculty at the University of Minnesota. He left Minnesota for his position at Texas in January 2005. In 2001, he received the David Turnbull Lectureship Award from the Materials Research Society.



EDWARD A. BOUCHET AWARD

Angel García
Rensselaer Polytechnic Institute
[Photo and Biographical information unavailable at press time.]

Citation: "For his contributions to the understanding of the role of water in the dynamics and folding of proteins through computer simulations."

JOSEPH BURTON FORUM AWARD

David Albright
Institute for Science and International Security
[Photo unavailable at press time.]

Citation: "For his tireless and productive efforts to slow the transfer of nuclear weapons technology. He brings a unique combination of deep understanding, objectivity, and effectiveness to this vexed area."

Albright is founder and president of the non-profit Institute for Science and International Security (ISIS) in Washington, D.C. Albright has published numerous assessments in technical and

policy journals, and has co-authored four books. During his career, he has contracted or consulted with many organizations, including the Congressional Research Service, the International Atomic Energy Agency (IAEA), and Los Alamos National Laboratory. In June 1996, he was the first non-governmental IAEA inspector of the Iraqi nuclear program. Prior to founding ISIS in 1993, he was a senior staff scientist at the Federation of American Scientists and a member of the research staff of Princeton University's Center for Energy and Environmental Studies. Albright received a masters of science in physics from Indiana University in 1980, and a masters of science in mathematics from Wright State University in 1977.

JOHN H. DILLON MEDAL

Kenji Urayama
Kyoto University

Citation: "For insightful experiments that probe the nature of polymer networks."

Urayama is currently an associate professor in the department of materials chemistry at Kyoto University. He joined Institute for Chemical Research, Kyoto University as an assistant professor in 1994, with bachelor's and master's degrees from Kyoto University. In 1996 he received a PhD from Kyoto University. He did postdoctoral research at the Max-Planck Institute for Polymer Research in 1998. In 2003 he moved to the Department of Materials Chemistry at Kyoto University. His main interest focuses on the stimuli-response relationships of polymer networks and gels.



JOSEPH F. KEITHLEY AWARD

Frances Hellman
University of California, Berkeley

Citation: "In recognition of using emerging micromachining techniques to significantly extend the range of calorimetry into the realm of nano-scale science, by construction of Si based microcalorimeters capable of operating in extreme environments with unprecedented sensitivity and accuracy."

Hellman received a PhD in applied physics from Stanford University in 1985 and spent the next two years as a postdoc at AT&T Bell Laboratories before joining the faculty of the University of California, San Diego. In 2004, Hellman joined Lawrence Berkeley National Laboratory and also became a physics faculty member at UC-Berkeley. Hellman's research concerns the physics of novel magnetic, semiconducting, and superconducting materials. Current research includes effects of spin on transport and tunneling, finite size effects on magnetic and thermodynamic properties; formation of perpendicular magnetic anisotropy in films and effects of vapor-deposition growth on short and long range chemical and structural order in amorphous and crystalline alloys.



MARIA GOEPPERT-MAYER AWARD

Hui Cao
Northwestern University

Citation: "For her groundbreaking contributions to the experimental studies of coherent light generation and transport in disordered media, including her invention of microlasers based on disordered media."

Cao received her PhD in applied physics from Stanford University in 1997. Since then she has been on the faculty of Northwestern University in physics and astronomy. Cao's primary research interests are in the areas of quantum optics and mesoscopic physics. Among the honors she has received are the Alfred P. Sloan Foundation Fellowship, David and Lucile Packard Foundation Fellowship in Science and Engineering, National Science Foundation CAREER Award, Overseas Chinese Physics Association Outstanding Young Researcher Award, and Alexander von Humboldt Foundation Friedrich Wilhelm Bessel Research Award.



of a five-year MacArthur Fellowship from 1981 to 1986, he also took two periods of leave from Columbia (1984-1985 and 1993-1994) to serve as a visiting scholar at the U.S. Arms Control and Disarmament Agency, working on nuclear test ban verification. He has served on several review panels for U.S. Air Force, and NAS/NRC committees.



model of a Photonic Band Gap accelerator at 17 GHz. After graduating from MIT in 2005, Evgenya accepted a Director's Postdoctoral Fellowship from Los Alamos National Laboratory (LANL). Her work at LANL is concentrated on the construction of a PBG travelling-wave tube at W-band.

includes ion trapping and precision laser spectroscopy to test the constancy of fundamental interactions.

MITSUYOSHI TANAKA DISSERTATION AWARD

Maria Florencia Canelli
Fermilab

Citation: "For developing a new technique for extracting the maximum information in top decay events in order to measure the W boson helicity."

Canelli graduated in 1995 from the Universidad Nacional de Asuncion, Paraguay. She obtained her PhD from the University of Rochester in 2003. Since 2003, she has held a postdoctoral appointment with UCLA at the CDF experiment at Fermilab. Canelli's dissertation involved a novel technique to gain information about the properties of the top quark. The method, is based on a direct comparison of all measured variables in antitop-top events produced at the Fermilab Tevatron with a leading matrix-element that describes the entire production and decay process. In her dissertation, she examined the decays of W bosons in such events, in order to establish how the spin of the W boson in top-quark decays correlates with its momentum vector.



MITSUYOSHI TANAKA DISSERTATION AWARD

Alysia D. Marino
Fermilab

Citation: "For her contributions to the measurement of neutrino fluxes which conclusively support the hypothesis of flavor oscillation of neutrinos produced in the sun as they travel toward the earth. The results further suggest the most likely cause of the flavor change to be matter-induced oscillation."

Alysia Marino received her A.B. degree in physics from Princeton University in 1998. She pursued neutrino research in graduate school at the University of California at Berkeley, receiving her PhD in 2004. The topic of her dissertation was a measurement of the solar neutrino flux in the second phase of the SNO experiment. The results of this measurement provided compelling model-independent evidence for neutrino flavor changes. Since graduating, Marino has shifted the focus of her research to accelerator-generated neutrinos. She is currently a postdoctoral researcher at Fermi National Accelerator Laboratory.

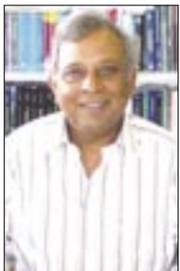


NICHOLSON MEDAL

Padma Kant Shukla
Ruhr-Universität Bochum

Citation: "For his prodigious and successful efforts in encouraging young scientists from under-represented countries throughout the world, by his regular visits to their universities and by facilitating their participation in international meetings and workshops."

A native of India, Shukla earned his PhD in physics from Banaras Hindu University in 1972, and a second PhD in theoretical plasma physics from Umea University in Sweden in 1975. He has been a member of the physics and astronomy faculty at Ruhr University in Germany since 1973, and a permanent visiting professor at Umea University in Sweden since 1997. His current work is primarily in the field of theoretical plasma physics. He also works on geophysical flows, nonlinear optics, Bose-Einstein condensation, nonlinear physics of metamaterials, nonlinear neutrino plasma physics, and nonlinear quantum electrodynamics.



LEO SZILARD AWARD

Paul G. Richards
Columbia University

Citation: "For work applying his expertise in geophysics to seismic detection of nuclear explosions. His developments in "forensic seismology" are at the heart of the verification required for a test ban."

Born in Gloucester-shire, England, Richards earned his PhD in geophysics from the California Institute of Technology in 1970 and promptly joined the faculty of Columbia University, where he is presently the Mellon Professor of Natural Sciences. The recipient

DISSERTATION AWARDS

OUTSTANDING DOCTORAL THESIS RESEARCH IN ATOMIC, MOLECULAR, OR OPTICAL PHYSICS AWARD

Ana Maria Rey
University of Maryland

Citation: "Ultra-cold bosonic atoms in optical lattices."

A native of Colombia, Rey pursued her undergraduate studies in Bogotá at the Universidad de los Andes. In 2000 Rey began her graduate studies at the University of Maryland at College Park. Her doctoral work was on ultracold bosonic atoms loaded in optical lattices with special focus on the superfluid to Mott insulator phase transition. She completed her PhD in 2004. In 2005 she was awarded the ITAMP postdoctoral Fellowship at the Harvard-Smithsonian Center for Astrophysics, where she does research in atomic physics.



OUTSTANDING DOCTORAL THESIS RESEARCH IN BEAM PHYSICS AWARD

Evgenya I. Smirnova
Massachusetts Institute of Technology

Citation: "For the design, fabrication and successful testing of a 17 GHz electron accelerator utilizing a photonic crystal structure."

Evgenya Smirnova received her Bachelor's Degree from Nizhny Novgorod State University (Nizhny Novgorod, Russia) in 1999, and her Master's Degree from the same institution in 2002. She was admitted to Massachusetts Institute of Technology (MIT) in 2000, where she worked under the supervision of Dr. Richard Temkin. As a part of her dissertation work, she developed and tested the first working



NICHOLAS METROPOLIS AWARD

Joseph A. Barranco
University of California, Berkeley

Citation: "For the development of computational techniques to handle 3D compact vortices in rotating shear flows, and for the application of these techniques to solve longstanding problems in the theory of planet and star formation."

Barranco earned his B.A. in 1993 from Harvard University. He attended the University of California, Berkeley for graduate studies in the department of astronomy. He worked in developing a new spectral code to study compact, three-dimensional vortices in rotating, shearing, stratified systems such as protoplanetary disks. He graduated from Berkeley in May 2004 with a PhD in Astrophysics. He won an NSF Astronomy and Astrophysics Postdoctoral Fellowship, which he split between at the Kavli Institute for Theoretical Physics in Santa Barbara, CA, and the Harvard-Smithsonian Center for Astrophysics. Currently in his first year at Harvard, he is applying his new code to problems in planet formation.



DISSERTATION AWARD IN NUCLEAR PHYSICS

Li-Bang Wang
University of Illinois,
Urbana-Champaign

Citation: "For his outstanding and innovative experimental work to precisely measure the charge radius of the exotic and short-lived isotope ⁶He by laser spectroscopic studies of single atoms stored in a magneto-optical trap. The result helps to reveal the nature of weakly bound nuclei and serves as a key benchmark for nuclear models."

Wang received his B.S. in physics from National Taiwan University in 1996. In 1999, he went to the University of Illinois at Urbana-Champaign to pursue a doctoral degree. His thesis work was a laser spectroscopic determination of the ⁶He nuclear charge radius. He received his PhD in May 2005 and is now a postdoctoral fellow at Los Alamos National Laboratory. His current work



APS Council Announces 2005 APS Fellows

The APS Council elected the following as Fellows of the Society at its November 2005 meeting. Nominations for fellowship are received by the APS headquarters throughout the year, and are forwarded for review to the appropriate division, topical group or forum fellowship committees. The deadlines for the various units appear on page 8 of this insert, and are posted on the web.

Fellowship nomination forms may be obtained by accessing the APS URL (<http://www.aps.org/fellowship/form.cfm>), or by sending an email message to honors@aps.org or by writing to the APS Fellowship Office, One Physics Ellipse, College Park, MD 20740-3844

2005 Fellows (Alphabetical by Last Name)

Albright David
Institute for Science and International Security
Forum on Physics & Society
For ground-breaking technical analysis of secret nuclear weapons program in countries such as North Korea, Iraq, and South Africa and for his definitive analysis of world-wide fissile material production.

Allen Bruce
University of Wisconsin -Milwaukee
Gravitational Topical Group

For his leading contributions to quantum field theory in an inflationary universe, to our understanding of cosmic strings, and to gravitational-wave phenomenology and detection.

Andersen Nils Overgaard
Niels Bohr Institute, Denmark
DAMOP (Atomic, Molecular, Optical)
For his contribution to the study of atomic collision processes through electron and photon polarization

analysis and the systematic development of quantum-mechanically complete descriptions.

Anderson Scott Law
University of Utah
Chemical Physics
For contributions to understanding chemical dynamics of ion-molecule reactions, size-selected model catalysts, and gas-phase clusters.

Anderson, Jr. Charles E.
Southwest Research Institute
Shock Compression Topical Group
For his leadership in combining numerical simulations with experimental data to develop advanced models of the response of materials to shock, impact, and penetration.

Andreoni Wanda
IBM Zurich Research Laboratory
Computational Physics
For important contributions to the development and implementation of ab-initio computational methods, and for pioneering investigations that led to deep insights into the behavior of diverse condensed matter, chemical, and biomolecular systems.

Aspect Alain Jean
Laboratoire Charles Fabry, France
DAMOP (Atomic, Molecular, Optical)
For his trailblazing experimental tests of Bell's inequalities, and seminal contributions to laser cooling and atom optics.

Aubry Nadine N
New Jersey Institute of Technology
Fluid Dynamics
For pioneering work on the derivation and analysis of reduced representations of turbulent and other complex fluid flows, as well as recent contributions to micro fluid dynamics.

Balibar Sebastien
Ecole Normale Super. - Paris
DCMP (Condensed Matter)
For the observation and analysis of the roughening transitions and quantum growth dynamics in helium crystals, and for the discoveries of quantum evaporation, quantum cavitation and acoustic crystallization.

Bandyopadhyay Supriyo
Virginia Commonwealth University
Forum on Industrial and Applied Physics